

## TCT-360

**Appropriate Intravascular Ultrasound Measurement Intervals for Assessment of Cardiac Allograft Vasculopathy after Heart Transplantation**

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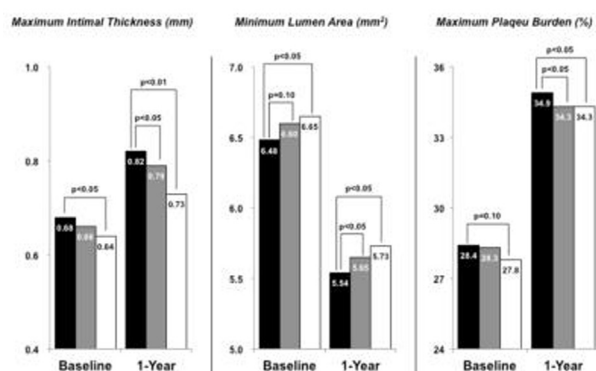
**Background:** Cardiac allograft vasculopathy (CAV) is typically characterized by concentric intimal thickening diffusely distributed throughout the coronary arterial tree. This study aimed to test the hypothesis that the accuracy of CAV assessment by IVUS is maintained at wider measurement intervals than the standard 1-mm intervals used for the analysis of atherosclerotic lesions.

**Methods:** In 20 heart transplant recipients, baseline (4-6 weeks post-transplant) and 1-year IVUS were analyzed at 1-mm, 2-mm and 3-mm intervals in the first 50 mm of the LAD artery. 2D IVUS indices, including maximum intimal thickness (MIT), minimum lumen area (MLA) and maximum plaque burden (Max PB), were also determined based on the volumetric datasets. The measurements obtained at 1-mm intervals were used as a gold standard.

**Results:** At baseline, both volumetric and 2D indices were comparable at 1-mm and 2-mm intervals, and statistically significant differences were only observed with at least 3-mm intervals for vessel and lumen volumes ( $p < 0.01$ ), MIT ( $p < 0.05$ ) and MLA ( $p < 0.05$ ). At 1 year, volumetric IVUS indices did not differ significantly among the three intervals. On the other hand, both 2-mm and 3-mm intervals showed statistically significant differences in MIT, MLA and Max PB from 1-mm intervals (Figure).

**Conclusions:** The diffuse nature of CAV appears to allow simple volumetric assessment at wider measurement intervals. However, 2D IVUS indices, reflecting the worst site and proven to predict long-term outcomes, are likely best captured by the standard 1-mm intervals established for the analysis of atherosclerosis.

## ■ 1-mm Intervals vs ■ 2-mm or □ 3-mm Intervals



## TCT-361

**Can we improve the diagnostic efficacy of angiography and intravascular ultrasound in assessing intermediate lesions?**

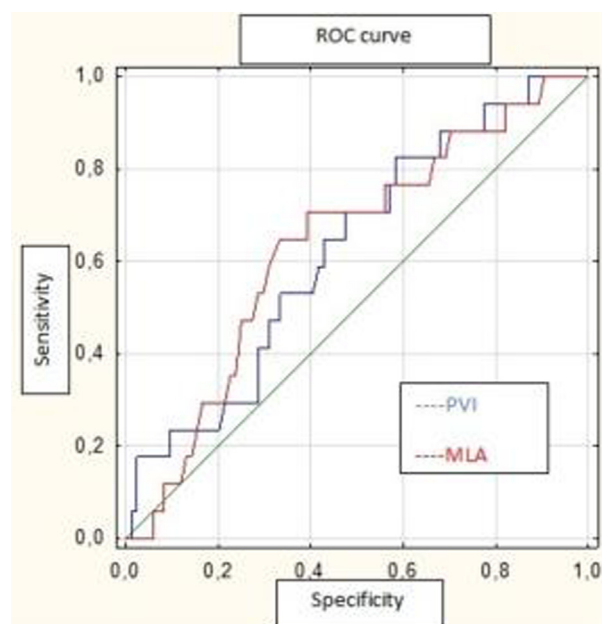
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**Background:** Minimal lumen area (MLA) and minimal lumen diameter (MLD) are the best known parameters of bad prognosis in left main stenosis (LMS). In our prospective study we introduced plaque volume index (PVI=plaque area volume (PAV)/ vessel area volume (VAV)) as an additional parameter patients during IVUS procedure. PVI is a parameter for level of arteriosclerosis.

**Methods:** The patients population with ambiguous lesions in left coronary artery (LCA) were referred to IVUS assessment (n=100). Patients were divided into three groups according to MLA in left main: gr.1 with MLA < 6mm<sup>2</sup> (n=26), gr.2 with 9 > MLA > 6mm<sup>2</sup> (n=37) and gr.3 with MLA > 9mm<sup>2</sup> (n=27). According to ESC recommendations patient from gr.1 were treated to the Heart team. Patient from gr.2 and gr.3 were treated with optimal medical therapy (OMT).

**Results:** The demographic and clinical characteristics of the 3 groups were not statistically different. In our analysis PVI (AUC=0.6246,  $p=0.0715$ ) was not worse than MLA (AUC=0.6341,  $p=0.0721$ ) in predicting MACE, difference AUC=0.0095,  $p=0.8982$  (fig.1). No complications occurred during ICUS procedures. At 12 months observation follow was obtain by phone in whole group. The MACE occurred in 17% (17pts).

**Conclusions:** PVI can be additional parameter in decision making process in borderline cases. PVI accurate describes level of arteriosclerosis and could predict an advancement in whole coronary tree.



## TCT-362

**Relation between renal function and neointimal tissue characteristics after drug-eluting stent implantation: virtual histology-intravascular ultrasound analysis**

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**Background:** Few data are available about neointimal tissue characteristics after drug-eluting stent (DES) implantation in patients with decreased renal function. We used virtual histology-intravascular ultrasound (VH-IVUS) to assess the neointimal tissue characteristics according to the baseline renal function.

**Methods:** We compared neointimal tissue components between patients with chronic kidney disease (CKD) [n=19, estimated creatinine clearance (CrCl) < 60 mL/min] and those without CKD (n=229). The region of interest was placed between the luminal border and the inner border of the stent struts and tissue components were reported as percentages of neointimal volume.

**Results:** Mean follow-up durations between DES implantation and follow-up VH-IVUS study were 12.0±4.1 months in CKD group and 11.4±5.6 months in non-CKD group ( $p = 0.519$ ). At follow-up, neointima volume was significantly greater (72±47 mm<sup>3</sup> vs. 47±26 mm<sup>3</sup>,  $p < 0.001$ ) and %neointima necrotic core (NC) volume was significantly greater (25.0±11.4% vs. 17.9±10.2%,  $p = 0.012$ ) in CKD group compared with non-CKD group. There was negative correlation between CrCl and neointima volume ( $r = -0.250$ ,  $p < 0.001$ ), however, there was no significant correlation between CrCl and %neointima NC volume ( $r = -0.034$ ,  $p = 0.591$ ). Only independent predictor of follow-up %neointima NC volume ≥10% was neointima volume (odds ratio 1.025, 95% confidence interval 1.013-1.036,  $p < 0.001$ ).

**Conclusions:** Renal function was associated with in-stent neointimal growth, but it was not associated with neointima NC formation, instead the amount of neointima was associated with more neoatherosclerosis in patients who underwent DES implantation.

## TCT-363

**Precision of a Novel High-Definition 60MHz IVUS in Quantitative Measurement: Comparison with Conventional 40MHz IVUS and Optical Coherence Tomography**

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**Background:** Previous validation studies have shown that optical coherence tomography (OCT) can provide superior precision in quantitative measurements to conventional 40MHz IVUS. This study aimed to evaluate the accuracy of a novel high-definition 60MHz IVUS in head-to-head comparison with currently available intravascular imaging devices.

**Methods:** Five coronary models with known diameters were imaged using Fourier-domain OCT (Dragonfly, St. Jude Medical), 40MHz IVUS (OptiCross, Boston